

## Case Report

# Acupuncture management of metabolic-allergic eosinophilia: a single-patient case report

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**Received:** 01 April 2026

**Accepted:** 21 July 2026

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## ABSTRACT

Eosinophilia is a heterogeneous condition associated with allergic, metabolic, or idiopathic etiologies and is often accompanied by systemic inflammatory manifestations. Integrative approaches such as acupuncture have been explored for their potential immunomodulatory and anti-inflammatory effects. This case report describes the clinical and laboratory outcomes of acupuncture as a sole therapeutic intervention in a patient with metabolic-allergic eosinophilia. A 57-year-old male with a history of hypertension presented with pruritic erythematous lesions on the right leg, persistent phlegm, throat congestion, mild breathlessness, and generalized heaviness. Laboratory investigations revealed mild eosinophilia, markedly elevated immunoglobulin E (IgE), increased high-sensitivity C-reactive protein (hs-CRP) and homocysteine levels, hyperuricemia, hypertriglyceridemia, and vitamin D deficiency. Clinical examination showed cutaneous inflammation and phlegm accumulation. Traditional Chinese Medicine assessment indicated a Phlegm-Damp pattern with Qi stagnation involving the lung-spleen-liver axis. The patient underwent a two-week acupuncture protocol as the sole treatment, targeting LI4, LI11, SP9, ST36, LU7, BL13, BL20, BL23, and LR3. No concurrent pharmacological or alternative therapies were administered. The acupuncture sessions were well tolerated, with no adverse events reported. Following treatment, the patient experienced significant symptomatic improvement, including a reduction in pruritus, improved respiratory comfort, decreased phlegm, better sleep quality, and enhanced overall well-being. Post-treatment laboratory findings demonstrated reductions in IgE levels (from 996 to 612 IU/mL), eosinophil percentage (from 7.8% to 5.6%), triglycerides, uric acid, hs-CRP, and homocysteine. This case suggests that acupuncture may be a safe and potentially effective supportive therapy for metabolic-allergic eosinophilia, contributing to symptomatic relief and improvements in inflammatory, immunological, and metabolic parameters. Further well-designed controlled studies with larger sample sizes are necessary to validate these findings and clarify underlying mechanisms.

**Keywords:** Acupuncture, Eosinophilia, Metabolic-allergic inflammation, Traditional Chinese Medicine, Complementary medicine, Inflammatory biomarkers.

## INTRODUCTION

Eosinophilia refers to an elevated peripheral blood eosinophil count, typically defined as greater than 500

cells/ $\mu$ L, and can arise from a wide range of conditions, including allergic diseases, parasitic infections, drug reactions, autoimmune or hematologic disorders, or may be classified as idiopathic or hypereosinophilic when no specific cause is identified.<sup>1</sup> In clinical settings,

individuals with eosinophilia often present with non-specific symptoms such as fatigue, fever, abdominal discomfort, cough, breathlessness, and allergic features like rhinitis or urticaria, and may also show organ-specific signs based on the tissues involved.<sup>2</sup> A recent prospective study from India similarly noted that eosinophilia-arising from causes such as parasitic infections, atopy, or idiopathic origins-was frequently associated with systemic symptoms including fatigue, cough, fever, and abdominal pain.<sup>3</sup> The management of eosinophilia depends on the underlying etiology. In allergic or immune-mediated types-such as allergic asthma, eosinophilic lung diseases, or hypereosinophilic syndromes-treatment typically includes corticosteroids, immunosuppressive medications, or biologic agents such as anti-IL-5 therapies when indicated.<sup>4</sup> However, long-term use of immunosuppressive drugs may result in considerable side effects, and when the underlying cause of eosinophilia is uncertain, there is an increasing need for safer adjunctive or supportive therapeutic approaches.

Complementary and integrative approaches-especially acupuncture within the framework of Traditional Chinese Medicine (TCM)-have gained interest as potential therapeutic options. Acupuncture, a fundamental modality of TCM, involves stimulating specific points on the body to help restore physiological balance.<sup>5</sup> It is traditionally thought to dispel Phlegm-Damp and harmonize Lung-Spleen functions, which corresponds with modern findings demonstrating its capacity to influence mast-cell activity, regulate cytokines, and modulate neuro-immune pathways.<sup>6</sup> Modern research shows that acupuncture affects the nervous, endocrine, and immune systems, leading to analgesic, anti-inflammatory, and immunomodulatory outcomes.<sup>7</sup> Clinical trials in allergic conditions, such as asthma and rhinitis, report improvements in symptoms and modest reductions in eosinophilic inflammation.<sup>8</sup> Together, this evidence positions acupuncture as a scientifically supported, low-risk complementary therapy with potential benefit in immune-mediated and eosinophilic conditions. However, despite these findings in allergic diseases, there is no published clinical evidence specifically evaluating acupuncture for systemic or metabolic allergic eosinophilia; existing studies focus on asthma or rhinitis, not eosinophil count reduction as a primary outcome. Therefore, this study aimed to evaluate the therapeutic effect of acupuncture on clinical symptoms, inflammatory markers, and eosinophil levels in a patient with metabolic-allergic eosinophilia.

## CASE REPORT

### *Patient information*

A 57-year-old male presented with a two-month history of red, mildly itchy skin patches over the right leg, along with persistent phlegm, throat congestion, and occasional mild breathlessness. He also reported general heaviness of the body. His past medical history included hypertension for 6

years under amlodipine 5mg night per day. Three months earlier, he had been hospitalized for an acute episode of breathlessness, which resolved with supportive care. He was not on any new medications and denied any recent infections or identifiable allergic exposures. The patient also reported irregular bowel habits and heightened work-related stress. There was no notable family history of allergic conditions or eosinophilic disorders.

### *Clinical findings*

On clinical assessment, the patient's vital parameters were largely within normal limits, with a blood pressure of around 130/85 mmHg, pulse rate of 78 beats/min, respiratory rate of 16 breaths/min, and oxygen saturation of 98% on room air. Anthropometric measurements showed a height of 162 cm and a weight of 68 kg, yielding a BMI of 25.9 kg/m<sup>2</sup>, which falls in the overweight range. His waist and hip circumferences were 88 cm and 100 cm, respectively, resulting in a waist-to-hip ratio of 0.88. Physical examination revealed mild phlegm without wheezing, along with throat and chest congestion, and erythematous skin patches indicative of allergic inflammation. His bowel habits were irregular, suggesting sluggish gastrointestinal elimination. Laboratory tests showed mild eosinophilia and markedly elevated IgE levels, supporting an allergic-reactive state. Elevated hs-CRP and homocysteine reflected chronic inflammation, while hyperuricemia, increased triglycerides, and low vitamin D levels pointed toward underlying metabolic dysregulation.

### *Diagnostic assessment*

Based on the patient's symptoms and investigation results, a diagnosis of metabolic-allergic eosinophilia with systemic low-grade inflammation was established. The overall presentation suggested secondary eosinophilia driven by immunological and metabolic factors, rather than a primary hematologic condition. From a Traditional Chinese Medicine viewpoint, the clinical pattern corresponded to Phlegm-Damp accumulation with Qi stagnation and disharmony among the Liver, Spleen, and Lung systems, accompanied by mild internal Heat.

### *Therapeutic intervention*

The patient was treated exclusively with acupuncture, guided by the TCM diagnosis of Phlegm-Damp accumulation with Qi stagnation involving the Liver-Spleen-Lung axis. The therapeutic goals were to dispel Damp and Phlegm, restore smooth Qi flow, alleviate mild internal Heat, and enhance both immune and metabolic balance.

After proper skin preparation, sterile single-use needles were inserted, and deqi sensation was achieved through gentle manipulation. The needles were retained for about 20-25 minutes during each session over two weeks. Treatments were administered consistently throughout the

intervention, and the patient tolerated all sessions without any adverse effects.

The main acupuncture points selected included LI4 and LI11 to address itching and inflammation; SP9 and ST36 to reduce Dampness and support metabolic function; LU7 to clear phlegm and enhance respiratory ease; BL13, BL20, and BL23 to reinforce the Lung-Spleen-Kidney axis; and LR3 to regulate Liver Qi. This targeted acupuncture protocol contributed to improvements in skin symptoms, reduction of phlegm, and an overall enhancement in the patient's well-being.

### Follow-up and outcomes

Following the acupuncture treatment, the patient reported marked relief in skin itching and redness, decreased phlegm production, and improved breathing comfort. He also noted better sleep, greater mental calmness, and a feeling of lightness with reduced body heaviness. Clinically, the skin lesions showed diminished erythema, and there was no aggravation of eosinophilia. Post-treatment laboratory results demonstrated improvements compared to baseline, suggesting overall progress without any negative metabolic effects (Table 1).

**Table 1: Biochemical profile (Baseline and post-intervention).**

| Parameters    | Baseline value | Post-intervention value |
|---------------|----------------|-------------------------|
| IgE           | 996 IU/ml      | 612 IU/ml               |
| Eosinophils   | 7.8 %          | 5.6 %                   |
| Uric acid     | 9.7 mg/dl      | 7.9 mg/dl               |
| Triglycerides | 177 mg/dl      | 157 mg/dl               |
| hs-CRP        | 7.39 mg/l      | 5.24 mg/l               |
| Homocysteine  | 15.88 µmol/l   | 13.44 µmol/l            |
| Vitamin D     | 18.8 ng/ml     | 22.5                    |

## DISCUSSION

This is the first known study to examine the impact of acupuncture on clinical symptoms, inflammatory markers, and eosinophil levels in a patient with metabolic-allergic eosinophilia. The findings indicate that acupuncture provided meaningful improvements in this condition. These results are consistent with growing scientific evidence describing how acupuncture influences immune regulation and inflammatory pathways.

Acupuncture is recognized for its systemic effects, operating through neuroimmune pathways, autonomic regulation, and biochemical signaling. Evidence suggests that it activates sensory nerve fibers, engages central nervous system circuits, and modulates the release of neuropeptides and cytokines, collectively producing anti-inflammatory and immunoregulatory actions.<sup>7</sup> Mechanistic studies focused on immune function indicate that acupuncture can influence mast-cell degranulation,

macrophage activity, cytokine regulation, and T-cell differentiation-enhancing regulatory T-cell function while reducing Th2 responses. These actions directly target key processes involved in allergic and eosinophilic disorders.<sup>6</sup> These mechanisms are particularly significant because Th2 cytokines like IL-4 and IL-5 play key roles in promoting eosinophil development, survival, and tissue recruitment. Research in allergic respiratory disorders further supports the ability of acupuncture to influence eosinophil-mediated inflammation. In a randomized trial involving patients with allergic asthma, acupuncture resulted in improvements in lymphocyte subsets (CD3<sup>+</sup>, CD4<sup>+</sup>) and a modest reduction in peripheral eosinophil levels after 12 treatment sessions, indicating measurable immune modulation.<sup>9</sup> Experimental studies on allergic inflammation also show that electroacupuncture can suppress IL-5 expression, reduce airway eosinophilia, and limit tissue infiltration by downregulating Th2-driven pathways.<sup>10</sup> These mechanisms closely reflect the patient's condition in this case, where metabolic stress, allergic sensitivity, and markedly elevated IgE levels were likely contributing to the eosinophilic response.

Acupuncture may also modulate metabolic-inflammatory interactions, which are now understood to play a significant role in eosinophil imbalance. Research suggests that acupuncture can enhance microcirculation, improve vagal tone, lower oxidative stress, and regulate metabolic indicators such as triglycerides and inflammatory cytokines, thereby helping to reduce the low-grade inflammation characteristic of metabolic syndrome.<sup>11</sup> From a TCM viewpoint, the patient's pattern of Phlegm-Damp accumulation with Lung-Spleen-Liver disharmony aligns well with Western interpretations of mucus overproduction, metabolic overload, and immune dysregulation.<sup>12</sup> Points such as ST36, SP9, LU7, LI11, and LR3 are known for their roles in reducing inflammation, improving airway function, and modulating immune activity, which supports their use in this case.

### Strengths

A key strength of this case is the use of acupuncture as the only therapeutic intervention, enabling a clearer association between the treatment and the observed symptom improvements without interference from other modalities. Comprehensive clinical, biochemical, and Traditional Chinese Medicine evaluations contribute to a well-rounded understanding of the patient's metabolic-allergic eosinophilic condition. Additionally, the inclusion of a clear treatment timeline, detailed follow-up findings, and patient-reported outcomes enhances the transparency and reliability of the report.

### Limitations

The primary limitation of this report is its single-patient case report, which restricts generalizability and does not allow causal conclusions. Objective laboratory changes after treatment were modest, with most improvements

being clinical or subjective, making it difficult to precisely measure the therapeutic effect. Furthermore, the presence of several chronic metabolic factors complicates the ability to pinpoint the exact mechanisms driving the patient's improvement. Longer follow-up and comparative data would help strengthen the findings.

### Patient perspective

After completing the acupuncture sessions, the patient reported feeling lighter, calmer, and more energetic. He experienced a marked reduction in skin itching and redness, improved breathing ease, and less phlegm production. His sleep quality also improved, and he felt more mentally relaxed compared to before treatment. The patient expressed satisfaction with the therapy and noted that these improvements encouraged him to adopt healthier habits and stay committed to follow-up recommendations.

### CONCLUSION

This case indicates that acupuncture may offer meaningful clinical benefits for individuals with metabolic-allergic eosinophilia by modulating immune hyper-reactivity and alleviating underlying systemic congestion. The patient experienced improvements in dermatological symptoms, respiratory ease, inflammation-related discomfort, and overall well-being following acupuncture as the sole intervention. Although the results are promising, larger studies are needed to confirm the effectiveness of acupuncture as a supportive therapy in eosinophilic and metabolic-inflammatory conditions.

*Funding: No funding sources*

*Conflict of interest: None declared*

*Ethical approval: Not required*

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**Cite this article as:** Soundarapandiyan S, Princy AL, Krishnamurthy U, Chidambaram Y, Ravindran DV. Acupuncture management of metabolic-allergic eosinophilia: a single-patient case report. Int J Res Med Sci 2026;14:3621-4.